Word square P82111_en

A *word square of order k* is a matrix of $k \times k$ letters in form that in each row and in each column a word of the dictionary appears and that the same words are read horizontally and vertically. For instance, below some word squares of order three to eight are given:

```
B I T    C A R D    H E A R T    G A R T E R    B R A V A D O    L A T E R A L S
I C E    A R E A    E M B E R    A V E R S E    R E N A M E D    A X O N E M A L
T E N    R E A R    A B U S E    R E C I T E    A N A L O G Y    T O E P L A T E
         D A R T    R E S I N    T R I B A L    V A L U E R S    E N P L A N E D
                    T R E N D    E S T A T E    A M O E B A S    R E L A N D E D
                                 R E E L E D    D E G R A D E    A M A N D I N E
                                                O D Y S S E Y    L A T E E N E R
                                                                 S L E D D E R S
```

Write a program that reads a dictionary and prints if various matrices of characters are or are not word squares.

Input

Input has two parts:

- The first part is a dictionary of n words. First, the value of n is given. Then, n words of the dictionary (all in uppercase letters) come in lexicographical order.
- The second part is various matrices of characters. Each matrix starts with an integer k that indicates the number of rows and columns and continues with k^2 characters (all uppercase letters) arranged in k rows and k columns. The value $k = 0$ indicates the end on the input.

Output

For each matrix of the input, print "`YES`" if forms a word square using some of the dictionary words and must print "`NO`" otherwise.

Observation

In private test data is used a dictionary derived from */usr/share/dict/words* with four hundred thousand words and a thousand of matrices are tested.

Sample input

```
10
AREA BETTER BIT CARD DART HELLO ICE REAR TEN THE

3
BIT
ICE
TEN

4
CARD
AREA
REAR
DART

3
THE
HIS
ESA

3
THE
THE
THE

0
```

Sample output

```
YES
YES
NO
NO
```

Problem information

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